Mel Haas: A Life History

1936 – Present

by

Mel Haas and Perplexity Pro

“There are two ways to live well. You can be smart or pleasant. I’ve been smart for years, and I recommend being pleasant.”

Compiled from the author’s personal memoir website
melhaas.lwbook.net

Preface

This is a document about me: Dad, Grandpa, Mel, Betsy's husband. Sure, you'll find bits about my wife and family scattered through it, but that's not the point of this site. The spotlight here is on just me.

This book grew out of the History section of my personal website, melhaas.lwbook.net, a chronological march through the events of my life. I also pulled from the Family/Kids chapter, which tells the story of how our family grew, one child at a time.

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Comments, observations, complaints, or additions are always welcome -- send them along to melhaas333@gmail.com.

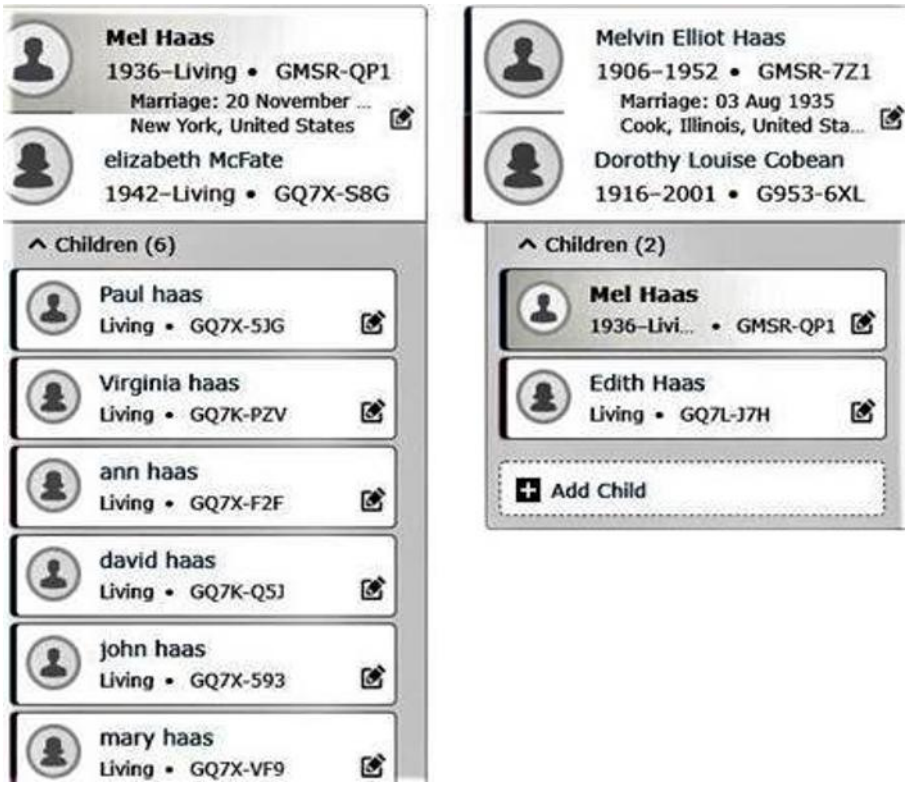
Birth

1936

I made my entrance on 06/23/1936 in Easton, Pa. (Easton Hospital in Wilson, Pa., to be precise). My father, Melvin (Mel), was a student and football player at Lafayette College, a big strapping fellow originally from Youngstown, OH. My mother, Dorothy (Dot), was born in Buenos Aires but raised in Evanston, IL. Mom had one year at Swarthmore College before life took her elsewhere. Her brother George graduated from Lafayette right alongside Dad, and her brother Dick went on to Electrical Engineering at MIT and later

picked up a master's at Case -- engineering clearly ran in the family.

Dad's family was large and included his twin sister, Melva, we were never close to any of the Youngstown clan. Mom's side was different -- she had four siblings, and we stayed close to all of them and to her parents. My grandfather, George Cobean, was an executive of Butler Paper Co. in Chicago, and later rose to President and Chairman of Bulkley Dunton Paper in New York, a huge international paper distributor. For most of my life, they lived in Scarsdale, NY, and I had the honor of being the oldest of 15 grandchildren.



Denver & Sheridan
193? – 193?

Here are the particulars of my family tree, as recorded on the Mormon Family Search Site -- the definitive genealogy, packed with information about my family and yours. Both my mother's and father's lines have been traced back several generations by various relatives, real detectives in their own right. There's even a bit of Betsy's family tree, put there by relatives we don't know from Adam. I'll admit, I've never been much for digging into family history myself. Our 6 adopted kids, for their part, have no backward contact with our biological ancestors at all.

My father became a salesman for a steel and iron company, and the moves came fast after that -- first Denver, CO, then Sheridan, WY, where my sister was born. We had a live-in maid to look after us kids, cook, clean, and do the laundry, typical for the era, and my grandparents always kept a maid to tend to Mom and her siblings too. Mom had a tough time adjusting to wartime reality once that all changed -- we had no maid in Pittsburgh, and none ever again after that.

Pittsburgh
193? – 1943

We moved to Mt. Lebanon, PA, a suburb of Pittsburgh, where I started kindergarten -- the first stretch of my life I actually remember.

Melly pulling Edith in a wagon

It was wartime, and the whole place was filthy from all the steel mills; we even had to wash the soap before taking a bath, that's how thick the grime was. Edith and I learned to swim just like every other kid of that era.

At home they called me "Melly," and sometimes, less kindly, "Smelly Melly." Dad was called "Mel" by the adults around him. Neither of us ever went by "Melvin" -- I hate that name to this day. My sister, meanwhile, was always "Edith," never "Edie" or anything softer. Life is not fair.

Mom was "Mom" to us and "Dot" to the grown-ups. Dad was simply "Dad" to us. "Mommy" and "Daddy" were titles reserved entirely for our grandmother and grandfather and their whole side of the family, even for themselves -- to us kids, they were "Granny" and "Grandpa." Our uncles, aunts, and cousins all went by first names, no prefixes attached ("Grace" was just "Grace," never "Aunt Grace").

One thing I picked up from my family is the vocabulary my elders used so freely, and I still try to deploy it appropriately, playing my proud role as the curmudgeon of the family.

Some of the best words ever!
Gallivant • Britches • Codger • Rigmarole
Hoodwink • Ragamuffin • Fiddle-faddle
Humbug • Skullduggery • Jalopy • Kibosh
Bejeebers • Flibberty-jibbit • Hullabaloo
Bamboozled • Flabbergasted • Brouhaha
Discombobulated • Lollygag • Malarkey
Cattywumpus • Nincompoop • Skedaddle
Shenanigans • Flummoxed • Pumpernickle
Berserk • Periwinkle • Thingamyjig • Whatsit
Confuzzled • Kerfuffle • Poppycock • Bogus
Balderdash • Fuddy-duddy • Thunderation
Whosemegadget • Skewwiff • Lambasted
Flim-flam • Whatchamacallit • Concoction
Doohicky • Gobsmacked • Thingamebob
Camaraderie • Nucklehead • Wishywashy
Fiddlesticks • Caterwauling • Rigmarole
Tomfoolery • Bodacious • Fiddle-dee-dee
Willy-nilly • Decrepid • Persnickety • Egads
Audacity • Baloney • Kerfuffle • Numb-skull
compiled by adgrayvisions

Dixon

1943 – 1945

We moved to Dixon, IL, where Dad served as wartime sales manager for Reynolds Wire Co., a manufacturer of window screening perched on the Rock River. I did 2nd, 3rd, and part of 4th grades in Dixon. During the war, the men were either overseas or working long hours, so we kids had no supervision to speak of -- and we ran wild, gloriously so.

Dad, Mom, Grandpa Me and Edith in Evanston

We lived in a heavily industrial neighborhood with several train lines, a shoe factory, a lumberyard, a derelict college building, and a large power plant near the river. The power plant had a slow-moving coal train we happily played on. The lumberyard offered stacks of air-drying wood, perfect for building forts. The old college building had boilers and pipes we turned into imaginary submarines and rocket ships. There were no men around to keep us off anything. The Rock River ran right through the center of

Dixon, and we played -- usually naked -- in the shallows two blocks from our street, and fished for catfish near the dam uptown. I don't recall any adult ever supervising our adventures -- looking back now, an awful lot of it was flat-out dangerous.

Men wore hats everywhere back then, and they were a constant bother. Homes and businesses kept coat and hat racks right by the front door. Cars, trains, and planes all had to be built tall enough to accommodate a man in his hat. Hats finally went out of style in the 1950s, but my stepfather still insisted I buy one to start my job at Lockheed -- I never once wore it. Another relic that vanished was the spittoon, those pots with a funnel top stationed outside doorways of shops and offices downtown. I remember visiting Grandpa's office in New York and finding them everywhere, hundreds of them, even tucked by desks in the outer

offices. Disgusting! And of course, my Dad and Grandpa both smoked cigars.

The movie A Christmas Story with Peter Billingsley is spot on -- it captures exactly how I remember life at home, school, and community in Dixon and Evanston. I love that movie and make a point of watching it on TV every Christmas.

Dixon was small, and we lived just blocks from farms and downtown alike. My sister and I had overnights at a farm that was part of the Reynold's estate. The farm family had kids our age, and we loved playing there among the cows, pigs, chickens, and all that wonderful machinery and barns. We all pitched in to help harvest potatoes, an experience that convinced me, once and for all, never to become a farmer.

In 3rd grade, at age 8, I had a paper route. After school, I'd walk a few blocks to the office downtown to fold my papers, load my bag, and deliver them near where we lived. Once a week I'd make the rounds collecting for the papers and for newspaper life insurance, armed with a ring of punch cards showing how much was owed, plus a punch and a purse. I came down with a mastoid infection once and was out for a couple of weeks, so Mom had to run the route for me. I always had a job after that, right up until I retired from Lucent in 2002 -- 58 years of steady work. Dad insisted that Edith and I learn how to work, and if we didn't have formal jobs, we sold potholders, grab rakes, and other odds and ends door-to-door. It's a work ethic I still carry with pride.

I listened to radio shows like Jack Armstrong, the All-American Boy, Captain Midnight, and The Lone Ranger, and my uncle gave me a set of The Boy Mechanic along with many of the Tom Swift Young Inventor books. One series of Jack Armstrong programs featured the Piper J-3 Cub airplane, and Wheaties cereal came with cut-outs on the box for building a J-3 model, complete with a shoe-box diorama rigged with threads so you could pilot it with stick and rudder -- remarkably similar to the Microsoft Flight

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Simulator of today. Of course, Captain Midnight always saved the day and caught the crooks using his airplane. Radio dramas were all we had for entertainment; few people had the time or money for movies or shows. The bar at the end of our street stayed busy, but I was never allowed inside it.

On my 10th birthday, my Uncle Dick gave me my first airplane ride, taking me up for a ten-minute hop in a rented 2-place, side-by-side Taylorcraft from the Dixon Airport. It transformed my life! I was absolutely thrilled, and for the next 25 years I devoured everything I could find about airplanes.

We now live close to the College Park Airport and Museum. They

have a Taylorcraft of that vintage on display. Nostalgic!

I got a bike one Christmas, and it expanded the whole scope of play. The town dump near the airport became a favorite haunt, stocked with all sorts of discarded farm equipment and junked cars. Treasures included bar magnets pulled from tractor magnetos and little wheels perfect for building carts. We'd bike to the mainline train station and lay pennies and pins on the tracks to be flattened -- crossed pins made an excellent miniature sword. Dixon was hardly ever a scheduled stop, so the big steam engines thundering past at full speed were a genuine thrill.

I kept a big pot at home stocked with tadpoles from a pond across the river from downtown, and it was endlessly fun watching the frogs develop before biking over to release them and restock. The river was full of catfish, big ugly fish with whiskers that other kids seemed to catch with ease. I spent plenty of time trying, using the same smelly balls of dough for bait and the same hooks, but I never caught a single one. Our favorite fishing spot sat just

upstream of the dam downtown, right where the coal train emerged from the power station. That train ran down one of the city streets and in and out of several big buildings along the river, and one stretch even crossed the river on a big trestle bridge. I could never quite figure out where all those trains -- all of them steam -- came from or where they went. With wartime gasoline rationing in force, cars and trucks were scarce; we had a car, but it only came out for necessary trips.

Evanston

1946 – 1954

The war ended, and the Reynold's son came home to reclaim his job, which meant Dad was out. We moved to Evanston, IL, where Dad commuted into Chicago as a sales representative for American Steel and Wire Co. Evanston is a tightly packed suburb, miles from any farm, dump, factory, or abandoned building worth exploring. Instead of an open river nearby, Evanston offered Lake Michigan, edged with mansions, private clubs, and carefully supervised beaches and parks.

Dad, Edith, me, Mom in snow in front of Evanston house

I entered the second half of 4th grade at Lincolnwood School, just a few blocks from our new home, and I was a genuinely unhappy and lonely kid. I didn't know a soul there and missed Dixon's open spaces and freedom something terrible. None of the kids at school or in the neighborhood did any of the things I loved doing back in Dixon, and I couldn't keep up with their sports or games. I was a country bumpkin, plain and simple, without their social graces, their shared local knowledge, or their sophisticated life experiences. My 4th grade teacher noticed I was almost blind.

Researchers note that poor vision can affect social relationships, emotional well-being, and quality of life well beyond childhood.
(The subject of another book)

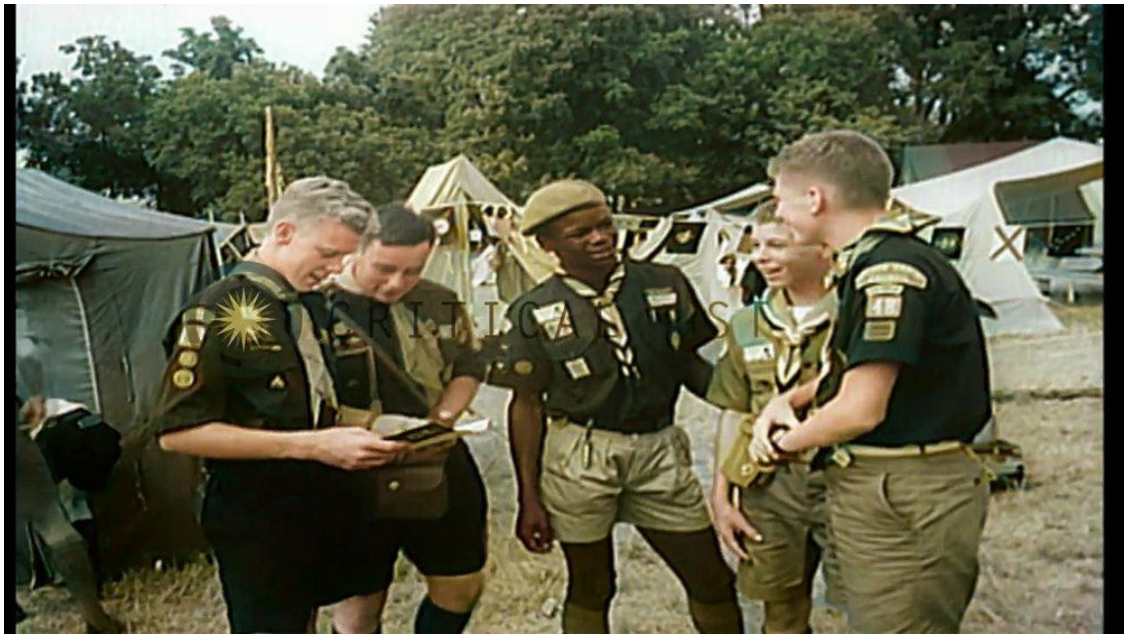
7th and 8th grades were at Haven School near where we lived. I was a poor student and never got the hang of rote memory -- I still can't tell you offhand what 8 times 7 is. I can't quote a poem or recall a historical date to save my life. My 7th-grade teacher ran many spelling bees, and I always missed my very first word. But I discovered something important about myself: I'm

particularly good at figuring things out. Printing and mechanical drawing were, hands down, my best classes.

That rote memory trouble shaped my whole academic life and everything after it. I had to drop Latin in High School because I simply could not handle the vocabulary.

Mom insisted that I play the clarinet, supposedly to fix an overbite I never even had. I couldn't memorize the notes and fingering and had no talent for it whatsoever. Our music teacher held a class for the whole 7th and 8th grades in the big band room, playing records of classical pieces, and we had to research and write papers on the composers. It must have stuck, because I still treasure those pieces and know the composers by heart. I sat in the orchestra and band for 7th, 8th, and 9th grade as the proud "last chair" clarinet, way at the back, trying my best to be quiet. Haven School put on a big show each year featuring Schubert's Unfinished Symphony, which I love and still carry in my head even though I never played a note of it correctly. The High School Band played all the Sousa Marches, but I wasn't part of the marching contingent, and I finally gave up playing altogether in my Sophomore year. Still, to this day, I love listening to classical and band music.

We attended the local Methodist Church, and that's where I became a Boy Scout. I threw myself into Scouts, earned many merit badges, reached Star rank, and was elected to The Order of The Arrow, a real camping honor. I even represented my troop at the 1950 National Jamboree at Valley Forge, PA.



Bunch of scouts at the 1950 Jamboree

I spent 3 summers at Evanston's scout camp on Duck Lake near Muskegon, MI -- some of the happiest days of my whole life. I spent most of my time out on the lake, swimming, canoeing, rowing, and sailing. Evanston also ran a winter camp with cabins for fun in the snow near Barrington, IL, and we even biked out there for weekend campouts.

Scouts were a significant part of my life. I would have worked toward Eagle rank -- I had most of the merit badges and service projects lined up -- but I could never pass the athletics badge required for Life and Eagle. I couldn't even successfully umpire a softball game; my poor eyesight and lack of interest in the game made the other players plenty mad at me. Still, I served as Assistant Scout Master and then Scout Master for several years in Fair Haven, and I loved every bit of guiding those younger scouts.

Dad gave me a motor for my bike in 8th grade, a little 1-1/2 HP lawnmower-type engine mounted on the front wheel, driving through a small grinding wheel against the front tire. I rode that bike to HS and all around town until it finally shook itself apart

junior year. I never had a license for it, and it had no lights or muffler, so I had a few run-ins with the police along the way.

Evanston Township High School is a huge building serving the whole town, though only about 1/4 of it was occupied when I was there -- the 1936 birth year was a small one, thanks to the Depression. I was a mediocre student with no social life to speak of. Athletics and school spirit weren't my thing. My friends were all nerds, just like me.

As soon as I could get a work permit, I started at Myerson's Pharmacy as a Soda Jerk and Clerk. It was a small corner drugstore near our home and church, and I worked there most afternoons and weekends for several years. I ran the store alone most Sunday mornings and handled everything -- ordering, stocking, cleaning, selling, delivering, the works. I used my bike for deliveries at first, and once I got my license, I graduated to Myerson's big DeSoto.

I also had a side job returning rented 35mm films from the High School to downtown Chicago each week -- an El ride straight to Skid Row, and an unpleasant one at that, especially in winter and after dark.

Dad and I built a screened patio on the side of the garage together. We framed it with cold-rolled punched steel angle, the very devil to cut and drill, though Dad knew his way around it since he was in the steel business. The patio had a laid brick floor and a tree growing right up through the roof in the middle -- beautiful work, though I honestly don't remember us ever using it much.

He and I finished the attic too, building out a big bedroom, storage room, and full bath. He handled the plumbing, framing, and flooring; I did all the wiring, the insulation, and most of the knotty pine board walls and ceiling, and I was proud of every bit of it. Dad was a very gregarious man, athletic and a hard worker, but he wasn't an especially empathetic father to a shy, near-sighted, clumsy kid -- he'd throw a ball at me and get mad when I couldn't catch it. Still, we worked beautifully together on projects like these. He didn't understand electricity at all and respected that I did. And he was always supportive of our church and our scout troop.

We tore apart an old roll-top desk and cut back the top and drawers with a band saw Dad set up in the basement. Edith and I steel wooled and gunked off years of accumulated paint and varnish, then refinished the whole thing with Butcher's Wax. It came out gorgeous, and it was mine until I moved away. It later became my niece Laura's, up in Rochester, MN. She may still have it, for all I know.

Dad's company engineered a buyout of Bussey Products Company, a supplier of farm products made of steel in Stickney, an industrial area of Chicago, and Dad became President of Bussey. The job was stressful and his commute was awful. He died of a heart attack in 1952, at just age 45.

Mom was also gregarious and athletic -- she golfed, bowled, and played tennis in various leagues and clubs, though none of that rubbed off on Edith or me; we were both thoroughly unathletic and noncompetitive. Mom was very much a socialite, with many friends and bridge parties galore. She'd been raised in Evanston in

a wealthy household and attended a "Finishing" High School, Roycemore, oriented far more toward social graces than academics. Edith went to Roycemore too.

A car parked on the street

Evanston had a "colored section" of small homes between the drainage canal and the high school, where our elderly cleaning women and a few of my friends lived. Mom discovered that the township had mixed up the deeds of that whole section -- some racist clerk in the records office apparently thought it was a joke. Folks there were paying property taxes on the wrong houses entirely and ran into real trouble selling their homes, getting loans, and probating wills. Mom led a campaign to shame the administration into fixing the records, and I had never seen her so angry in my life.

Evanston was very racist and clannish in those days. Those of us who were white and lived on the North side of town considered ourselves above the poorer folks living down near the border of Chicago. The elite lived along the lakeshore to the North; lesser folks lived to the West, away from the lake; and Black families could only live in the small enclave near the drainage canal. My public grade school wouldn't even let my Jewish friend Si

Handelsman attend -- though he was allowed into Haven School and the High School later on.

I got into photography and built a darkroom in our basement, though I never took very many pictures -- my real interest was in the equipment itself, and the smelly chemicals, and the whole process of it. My High School photography club had a few antique Speed and Crown Graphic cameras and an ancient single-lens view camera with a drop mirror, and I loved messing around with these far more than actually shooting sporting events. I bought a cheap, used 35mm half-frame camera in 8th grade and brought it to the Jamboree, but I barely took any pictures there either -- I'd lost my glasses and could hardly see a thing. Half frame meant I had to develop, print, and enlarge every picture myself, since the size was so unusual.

I got into electronics too, building several Eico and Heathkit instruments and designing and building electronic flash units of my own -- I even sold one! I built a recording rig into a suitcase that could play and record on both 78rpm records and reel-to-reel mag tape. This, along with the flash units, was shown at several science fairs, and I won an honorable mention in the Westinghouse Science Awards with an electronics project that used the trigger tube of the flash units as an ionic oscillator radio transmitter. I was awfully proud of that one.

A close-up of a device

When Dad died in 1952, Mom, Edith, and I moved to an apartment near Haven School and the drugstore. Mom had never worked before and had a genuinely rough time of it. She did the census one year, took speed writing classes, did clerical work, and eventually became a dental technician in downtown Evanston. She later married Paul Sellers, a widower 20 years older with a grown, married daughter -- Paul and his wife had known Mom and Dad through their bridge parties and such. Paul was super in every way. He was an investment banker with The Chicago Corporation, and we moved into his house up near the border of Wilmette.

We all loved Paul, and he and Mom made a wonderfully devoted, loving couple. Paul was born in Sellersburg, IN, and grew up in a rural area with no electricity, telephone, paved roads, or any of the other modern comforts we take for granted now. He served in World War I in France, handling horses and mules with the artillery, before moving to Chicago as a bank clerk and later rising to banking investment advisor. One of his clients once invited him on a yachting trip to the Gaspe Peninsula, which Paul recorded on his big 16mm movie camera -- I wish to this day we still had

those films, because they were spectacular. This was before the stock market crash, and the yacht was a full-rig square sail ship complete with a uniformed crew. Another of his clients was the Galvin family, the founders of Motorola, and he shepherded their accounts all through their growth from car radios to integrated circuits and cell phones.

Paul and Mom

I took over a corner of Paul's basement for my radio and electronics work, with Allied Radio in South Chicago serving as my supply depot. I hauled parts to science fairs and all the way to

MIT. There was another table set up with an oscilloscope, a vacuum tube multimeter, and a whole array of different power supplies I'd built from kits.

Me in my basement electronics workshop

All houses in those days had just 60-ampere service -- four screw-in 15-amp fuses, nothing more. Modern homes now carry 200 amp or larger service with 20 or more circuits and breaker switches. I added a few more circuits and fuses myself and wired the enclosed back porch, which had no outlets or lights until I got to it.

In my senior year, I went to the local airport and took flying lessons at Sally's Flying School. Palwaukee was one of the busiest uncontrolled airports in the country, sitting right in the traffic patterns of O'Hare and Glenview NAS. Sally had a dozen Piper J-3 Cubs, each marked with a distinctive red number on the fuselage. I took instruction there off and on over several years, whenever I could afford it. I passed my Private Pilots flight test from Sally

herself, who had me pull off a power-off wheel landing I hadn't even trained for -- I was thrilled beyond measure to earn that license. I went on at her school to check out in the Cessna 140. None of my flying up to that point involved any radio or air traffic control instruction at all -- it was pure stick and rudder, finger on the map work, the real thing.

One of Sally's J-3 Piper Cub in flight

Mom was terrified of flying. She'd loan me the car to get to the airport, but neither she nor Paul ever once watched me fly. None of my friends were much interested either, though we usually managed to round up a gang for the Glenview Naval Air Station airshow. A classmate of my uncle's had a Beechcraft Bonanza business plane, and he took me on several long trips -- one to Kenora, Ont., delivering a customer and his grandson to a grass strip fishing camp out in the boonies. On the return trip, we drifted off the flight plan, dodging thunderstorms at 12,000 ft.,

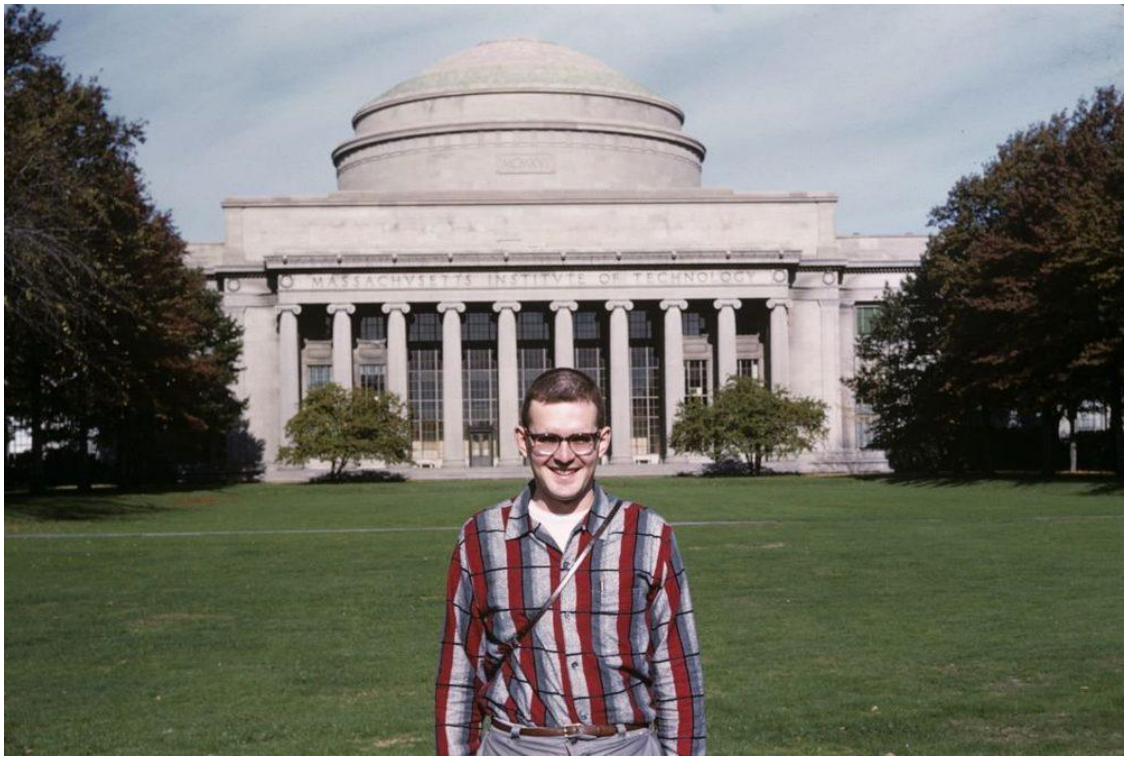
and got intercepted by 2 NORAD jets. Seeing an F-86 go straight up awfully close to us is quite a thrill, let me tell you.

After HS, I worked the summer for my uncle Dick at Dun Lee X-Ray Tube in Stickney. My commute was a small odyssey in itself: the bus to the Central St. train station, the Northwestern train to downtown Chicago, a walk to Union Station, and then the El out the Congress St. corridor to work. Once there, I'd go around to the various craftsmen, gathering the measurements of their work and drawing up the tubes they were making. Dun Lee made the best valve and X-Ray tubes in the business, and everyone there was rightly proud to work there -- a small company of about 30 employees, but what they produced was pure magic. The commute was so long, though, that I never had the energy left to become a draftsman, and I've avoided table work ever since.

MIT

Cambridge, 1954 – 1958

Now, the hard part. My mother and grandfather were dead set on me going to MIT, and once they set their minds to something, that was that -- it was a given that I was to go there, so I did. We lived in Evanston with Northwestern right there, and most of my friends went there. Some friends went 150 miles south to the University of Illinois. We never visited any college, not one. I took a tour of Northwestern Engineering School but never got any impression of campus life or entertained any thought of going there. MIT was a given, not a choice. Lucky for me, the 1936 birth year class was small, so it was not hard to get in. If you had a slide rule, you were in.



Me in front of MIT dome

I knew my way around Chicago and New York but had not seen Boston, and let me tell you, what a shock, what a delight that city was. A perfect city to be a student in.

However, I was not ready to be a student at MIT, not by a mile. I was way too immature, way too unworldly, way too shy, and just plain unprepared for what MIT demanded. There are only two kinds of students who thrive there: brilliant kids with high IQs and mature rich kids who are well-traveled and can afford tutors. I was neither one. I walked in inadequately prepared for life -- academically and socially both.

Looking back now with 90 years of perspective, I can say plainly that my life at MIT was horrible. And my experience was not unusual -- my cousin committed suicide in his dorm there. I had been groomed to go to MIT since I was little, with no say in the matter. I had no choice, and I had no life.

When I first arrived, I was assigned a room in the East Campus dorms. Mom insisted I was going to pledge a fraternity. They were across the river, and I did not have the slightest interest in or the social skills to walk through their doors. I met every friend I ever made at MIT in that first week in the dorm. I lived in Hayden 302 all four years and never set foot in any other living or social place at MIT. There are dozens of colleges in the area, and except for some library work up the street at Harvard, I never visited a single one of them.

I did not participate in any social activity in the dorms or school, and I did not attend church or continue with scouts. I had been suffering from depression and low self-esteem since 7th grade and all through High School. Going to MIT only made it worse.

I started in Electrical Engineering, following my uncle's path and what seemed to fit my hobbies. But by the end of the first year, it was plain as day that I could not handle the math, so I switched to Aeronautical Engineering. That turned out to be the wrong choice too, since the department was small and the professors were old and uninterested in undergraduates. There was no mentoring, no advising, no social contact with them or among the students -- and believe me, I know how much a little guidance can mean, because I went on to spend a lifetime trying to give students what I never got.

MIT had very few female students and faculty in those days. We had exactly one girl in Aero, and I confess I didn't even know her name. Even rarer were black students -- I knew of just one in the dorm.

Being MIT, there were no humanities courses worth mentioning. The typewriter my grandmother gave me got precious little use. I wrote a paper on Thucydides' Peloponnesian Wars without understanding a lick of it. The one humanities course that actually lit me up was about Skinner, and it involved some library work over at Harvard. MIT had a humanities requirement for graduation, along with requirements in athletics and ROTC, and rightfully so, many of us treated those as a joke. Years later, in retirement, I took freshman courses in Literature, Geography, History, Psychology, and Economics at Brookdale Community College in NJ -- and every single one of them ran circles around anything I got in the humanities at MIT.

I devoured Science Fiction for recreation, couldn't get enough of it. The Science Fiction Club brought in talks by Hal Clement and

Isaac Asimov -- what a treat. They, along with Robert Heinlein, Ray Bradbury, and Kurt Vonnegut, became my favorite authors.

Classical music was a big part of life in the Boston area, and I loved it. There were several classical music AM and FM radio stations, and MIT even had its own station down in the dorm basement. My friend Roger Buck was one of the DJs.

I had built a Heathkit FM radio myself, one of the few FM receivers in the whole dorm -- and I was proud of that. We strung over a mile of army field wire, scavenged from the war surplus store, around the East Campus dorm buildings, rigging up several "audio lines" -- connections tapped into individual amplifier speaker outputs and other students' room audio inputs. I got pulled into a city-wide experiment in stereo audio, and we set up various arrangements of microphones in the MIT auditorium broadcasting concerts live: one channel on WCRB FM, the other on WMIT AM out of our basement, running through the audio lines. The sound was so spectacularly better that stereo later became standard for everything audio -- we were tinkering our way straight into the future without even knowing it.

I genuinely liked the courses. The subject matter interested me, and there were plenty of choices and freedom to take classes in other departments. I specialized in thermodynamics and internal combustion engines. Junior year centered on the design of a 2-place twin-jet training plane. I'd had my fill of drafting table work back in high school and just could not get into the project. The airplane I designed turned out to be a real dud, nothing exciting or advanced about it. The math behind the project's

aerodynamics, structures, and stability-and-control was beyond me, and I did not do well in those courses.

Pneumonia knocked me flat in the middle of junior year -- I nearly died. Friends walked me over to the MIT Infirmary, bless them. After a week there, MIT sent me home for a month. I missed too much of a couple of courses and had to drop them.

An interesting thing happened in our class. We got a "Hungarian Freedom Fighter," a victim of the Russian takeover of Hungary, and he was Superman, plain and simple. A bit older, a Hungarian Air Force fighter pilot and champion glider pilot, an accomplished Aeronautical Engineering student, perfect English, tall, handsome, personable -- the darling of our professors and of the only girl in our class. I was not the only one who felt inferior standing next to him.

Don Pergandy driving the Fun Fair train

Fun Fair. I worked at the Fun Fair in Skokie, IL, near my home, all three summers. On good mornings, I would go out and fly, then drive the miniature train, run other rides in the afternoon and evening, then pick balls at the driving range at night. Truth be told, I was too depressed and burnt out to go seek anything better.

MIT Flying Club. The club owned two Cessna 140s -- 2-place rag wing 85 HP 100 mph simple airplanes -- and we flew them out of Hanscom Air Force Base in Bedford. What an exciting place that was, with B-50s (later models of the B-29) and other heavy planes sharing the field. I did not get much flying time myself, since it was an hour away by bus, but I loved dealing with the club itself. I produced the mimeographed newsletter, served as treasurer, and later became president. Most of the club's members were wealthy grad students and faculty with cars of their own -- it was not much of a social club, but I made the most of it.

A small airplane on the ground

The Little Green Car. Mom bought me a Renault Dauphine at the start of my senior year -- a tiny 4-door car that was a hoot to drive. Keeping it running was another matter entirely, and parking it legally in Cambridge was a real chore. Looking back, it was a big mistake to have it. But I loved driving that thing, and I loved fiddling with it too, the way plenty of kids back in high school fiddled with their hot rods. I had a couple of dates with a Simmons girl who liked to drive the car. Truth be told, she liked it, not me.

My senior thesis was on turbo supercharging the light plane engine, and I worked in the Mechanical Engineering engine lab -- work I found genuinely satisfying.

Senior year was very hard. I felt rootless, with no idea where I was headed. I did not want to go on to grad school and had no idea where I might find a job or build a life for myself.

The 704 Computer. IBM donated a 704 computer to MIT and built a whole new building just to house it. I had seen many 701s on a field trip to Pratt & Whitney and was fascinated by them. During my senior year, I signed up for the only course MIT offered in digital computing. The arrival of that new computer stirred up so much excitement that the class was grossly oversubscribed -- I often had to stand outside the classroom windows on a ledge just to hear and see the instruction. There was no textbook yet. A friend gave me a bootleg copy of the IBM 701 reference manual, but that was not much use since we had no computer access, and the course was mostly math anyway. I got an incomplete and stayed the summer trying to make sense of it. In the end, I flunked it -- the only course I ever failed, and I'd had over a C

average up to that point. I had also dropped some courses in my junior year and did not have enough credits to graduate with my class, so I had to complete another semester to graduate.

I had a job lined up at Mooney Aircraft in Kerrville, TX. They were interested in my work on turbosupercharging -- and years later, Cessna became the first to offer a turbosupercharger using the very same engine as my paper study. Now thousands of light airplanes use turbosuperchargers, and there's a quiet pride in knowing I was tinkering with that idea early. I was not disappointed to lose out on the job, though. I did not want to move to Texas.

My grandfather and mother were incensed that I did not graduate on schedule. I was left with no support and no will to continue the pathetic life I was leading. I did not want to stay another semester, and I could not justify wasting more of my grandfather's money. I was pathologically depressed since 7th grade, and honestly, I had no business being at MIT in the first place.

Army

Ft. Bragg, 1958 – 1961; return to MIT, 1961 – 1962

During the Eisenhower administration, a Cold War crisis flared up in Lebanon. Congress reinstated the draft, and I was on the rolls in a low birth year population, which meant my number was practically guaranteed to come up. I had a 4-year college deferment that expired. The Evanston draft board was kind enough to tell me I was going in September -- and sure enough, I received my draft notice while in basic training at Ft. Dix. My company commander read it out loud with great glee at an assembly, much to everyone's amusement but mine.

My drafted friends from high school were assigned to Ft. Leavenworth as clerk typists, and I did not want any part of that. I did not have a job or graduate school to get a deferment, either. The Navy and Air Force required longer enlistments, and Officer Candidate School required a degree I did not have. So I enlisted in the Army to become an aircraft mechanic.

My time in the Army turned out to be fun, genuinely so. My Boy Scout experience made basic training easy, and I was a bit more mature than most of the recruits around me. I went to Fixed Wing Mechanic School at Ft. Rucker, AL, and they asked me to stay on there as an instructor, but I wanted to get to a flying outfit instead. My first assignment put me with airborne artillery L-19 spotter planes at Ft. Bragg, NC -- not the best fit, since I had absolutely no desire to jump out of airplanes. The soldiers in my unit razzed me plenty as a non-airborne "leg."

At Ft. Dix, all my sergeants were black veterans of the Korean War, and they were uniformly impressive men -- true role models dedicated to training us to stay alive in combat. Although most officers were white, I never once observed racial discrimination in the Army, even stationed as I was in the deep south at Ft. Rucker and Ft. Bragg.

I taught for a while at the on-base Fixed Wing Mechanic school -- teaching always agreed with me. Later I became crew chief of an L-20 DeHavilland Beaver bush plane. We were a 2-plane unit with 3 mechanics, 2 flying officers, and a sergeant, supporting the Special Warfare Center -- Green Berets and Psychological Warfare units. We flew every type of mission those planes were capable of, covering the East Coast and some of the South.

An airplane on the ground

Our planes had the highest utilization in the 3rd Army, and I got a commendation for it -- a moment I'm still proud of. We flew both planes from daybreak to midnight most days and never let them go out of service. Our two planes were usually the first to take off

from the airfield in the morning and the last to return late at night. Many flying officers stuck at desk jobs at the Center needed 4 hours a month of training to keep their flight pay, so pilots and missions were easy to come by. I got lots of flying time as crew, and the most enjoyable part, hands down, was pushing Special Forces guys out the door over the woods at night -- those were real men. I had a bunk and lockers in the barracks up with the unit, but I spent most nights out in the hangar keeping the planes going.

On a flight from Stewart AFB in Newburgh, NY, back to Bragg carrying a ceremonial flag, we dropped down to take in the sights of Washington, D.C. Back then, before 9/11, that was common enough, and ours was a military flight with clearance. Then the L-20 engine stopped -- right as we passed over the White House and the Mall. We were at 4,000 feet in a bush plane that could land almost anywhere, so it was interesting rather than a panic. By the time Capt. Brett and Lt. Colburn reacted, we were well past D.C. and out over the river. We landed easily at Ft. Belvoir, and I spent two days there in my dress uniform, changing the plane's carburetor. Turns out some mechanic in the past had used heavy grease instead of a proper gasket, which let air leak into the float chamber -- probably right when power was applied to stop our descent.

I had a similar incident much later in my shared Cessna 170. On a trip back to Atlanta, I applied power to take off from Charlotte, NC, and the engine died right on the runway. Two 727s were queued up behind me waiting to take off, so my passenger and I had to hustle out and drag the plane onto the grass -- very

embarrassing. The engine started up fine, and the tower let us try again. The cause turned out to be the gasket between the two halves of the carburetor, which had perished and let in too much air. I had applied power too fast, and the engine stalled.

I left the Dauphine with my sister when I went off to basic training. She had a rough Chicago winter in a car with no heater or defrosters, poor thing. The car became too expensive to keep, so I traded it for a Harley 165 motorcycle. I did not need a car at Ft. Bragg anyway, since I had the Air Section's truck and jeep at my disposal.

A motorcycle parked next to a truck

I drove trucks in basic training, and then, thanks to an "exempt" job skill, I only pulled KP duty once in my 2-1/2 years in the Army. I never had parade duty and only stood guard at the airfield a couple of times. My time in the Army was enjoyable and worthwhile, plain and simple. We were doing work that needed to be done, and everyone worked as a team to get it done.

Some of the troops we served had been "advisors" in Vietnam, but none of the rest of the Army was getting shot at yet. I was fortunate to get out just as that war was starting to heat up. I stayed on-call for the reserves for many years afterward but never got called up. I finally unpacked my duffel bag for good in Cabin John, five kids later.

I sold the motorcycle to my friend Harry. Harry and I taught together at the on-base mechanic school, and he and his wife took me in as lifelong friends, keeping me sane through it all. They later gave me one of their many cats, Tiger, during one of my visits from Georgia. They eventually moved to the big island in retirement, and we still exchange Christmas cards with Gwynne to this day.

The depression I'd carried since 7th grade was still with me, but I was too busy and living beyond just myself to feel it much. I truly enjoyed serving in the Army and felt the worth of my work there -- something I never once felt in High School or at MIT.

Cambridge (MIT, 1961-1962). I hopped a ride on a general's plane to Bridgeport and then took the train to Boston to finish up at MIT. I took a summer course to justify getting out of my enlistment early, then carried the full semester course load required for my degree. The Aeronautical Engineering Department had become Aeronautics and Astronautics by then, so that's my degree. I took some space-related courses, but I concentrated on aircraft structures, which I was particularly good at -- I still don't quite know why, since it's mostly math.

I lived in an apartment on the top floor of an ancient house in Cambridge with my friend Jack Woodilla, one of the guys I'd met

that very first week at MIT. He went on to become a PhD Metallurgist and spent 9-plus years at MIT. Jack was a role model for all of us -- very studious, what we called a "Tech Tool," but always willing to go along with pranks and a Saturday lunch at Durgin Park. He was far more socially adept than most of us and stayed active in the Episcopal church in Copley Square. His parents were wonderfully supportive of Jack and visited often. Mine never visited once.

MIT had mandatory Army and Air Force ROTC. Most of us did Air Force ROTC and dropped out the moment we could. Jack did Army and became an officer, doing his duty in Germany while I was down at Ft. Bragg.

Some business school types had taken over the flying club by then, leasing modern planes for rich people. The whole atmosphere of a student organization was gone, so I did not fly that summer or that semester at all.

I graduated with a BS in Aeronautics and Astronautics, slightly over a C average, deeply depressed and hating every aspect of my MIT experience. I was estranged from my family, who believed that not graduating in 4 years amounted to flunking and that going into the Army was a disgrace. I had to get a job quickly, since I was running out of savings.

Lockheed

Marietta, GA, 1962 – 1964

Jobs were tough to get in those days. I was lucky, genuinely lucky, to get hired by Lockheed Georgia to work on the C-141. The plant in Marietta, just north of Atlanta, had been there since the war building B-29s, and it was huge -- almost too big to take in at first. They were making the C-130 there too, still in production to this day. The C-141 was supposed to be a jet version of that lineage, but it became much more. I am proud, truly proud, to have contributed to its success, and to the C-5 that followed.

C-141 First Flight

I joined the structures department's analysis methods unit -- a small outfit of just 10 engineers tasked with taking the design methods and analysis tools of Lockheed Burbank, where the plane was originally designed, and making sure the thousands of

draftsmen and engineers proving out the design were following proper procedures. It was exceedingly important work, and I loved sinking my teeth into it. Big airplanes are hard to build. The strength and loading of everything goes up by the square of the measures -- the cross-section of a beam, say -- but the weight goes up by the cube. A plane doubled in size would weigh eight times as much and simply could not fly.

The engineering section was an enormous mezzanine stretching over the entire length of the factory floor -- about a quarter mile -- covered wall to wall with desks and drafting tables crowded together. In some parts the desks butted right up against each other, and you had to climb over them just to reach the back rows. The boss's offices and conference rooms were partitioned off with curtains. Everybody smoked, it seemed, and the whole place sat in a permanent fog of smoke and smell -- you genuinely could not see from one stairway to the next. Our little section had one secretary at the back with the only phone. Every transaction in the whole plant happened person-to-person, face-to-face, and involved a form called an ANVO -- Accept No Verbal Order. It was a multipart form: one color copy for the originator, another color for the recipient, and another for the file with the originator's group secretary.

The factory floor was a maze of machines, work centers, and planes in every stage of assembly. The flooring was made of wood blocks, 4 inches or so, cutoff ends of treated lumber -- easy to replace and move around to suit different needs, though hard on the feet to walk on all day. Huge, full-span overhead cranes moved constantly, hauling material and plane parts from place to

place. The basement was a maze of tunnels, workshops, and parts depots. At the plant's ends stood gigantic doors leading out to the flight line, where finished planes rolled out one end while plane parts and material streamed in the other.

There were washrooms, drinking fountains, and cafeterias clearly marked "colored" and "white," but none of the "colored" ones were ever used. Everyone used the facilities marked "white," and I never saw any racial discrimination anywhere in the plant or in Marietta. My honest impression was that there was a lot more racial discrimination back home in Evanston and up in Boston than there was in Marietta -- and none at all, as far as I could see, at Lockheed itself.

I took some courses downtown at Georgia Tech, and race relations there were terrible, plain and simple -- I was ashamed just being near it. None of the students or professors were black, not much different from MIT in that respect. A popular eating place across the street featured decorations of ax handles, calling them "Dixie Drumsticks." The proprietor later became Governor of Georgia.

There was a huge parking lot in front of the factory with guarded entrance houses and pedestrian tunnels running down through the basement. Engineers, though, parked in a much smaller lot out back, with a small building of offices and a direct pathway straight to the engineering mezzanine. The guard there sat behind a counter, and the whole atmosphere was more casual and civilized. Factory workers queued up at timeclocks in the tunnels; engineers just had a timesheet kept by the department secretary. Factory workers dressed like factory workers; supervisors wore color-coded hard hats, engineers wore white shirts and ties, and

managers wore suits. Everyone carried a picture badge with a color-coded background -- mine was yellow, for engineer. I could go anywhere in the plant and escort visitors, though I was not allowed out on the flight line myself without an escort.

There were two computer centers down in the basement: one for business, planning, material handling, scheduling, and the like, and a smaller one just for engineering uses. Each was a warren of offices tucked among the pipes and wires of the factory above. Mathematicians, programmers, and computer operations people filled the offices, while the mostly punched-card equipment and computers sat in bigger rooms nearby. The whole plant was serviced by one huge WWII-vintage air conditioning unit -- a real engineering marvel in its own right. The computers themselves ran on vacuum tubes, not transistors, so they did not need extra cooling.

We were using the new IBM 709 computer, a later model of the 701, for finite element simulations of the trickiest parts of the structure. We ran simulations of the wing, which had a maddeningly hard-to-model double angle of sweep, plus the wing root and fuselage junction, the engine pylon junction, the fuselage barrel, and the T-tail. Each was broken down into small interlocking pieces -- finite elements -- represented by a handful of numbers describing their geometry and materials. Those numbers were encoded onto thousands of punched cards in the exact order the computer program FAMAS (a predecessor to Nastran) required. We were limited to whatever the 709 could handle in solving simultaneous equations, about 900 of them. The runs took hours of precious computer time, so we could only

schedule them at night. The computer was unreliable, and input mistakes had to be caught and fixed mid-run. As the only single youngster in the group, I did most of the troubleshooting and corrections for those nighttime runs -- and I relished it.

A person pointing at a computer screen

Computer operations in the aircraft business back then were very compartmentalized. An engineer developing an idea had to present it to a mathematician just to document the method. The project then passed on to a programmer, who coded the method in computer language onto worksheets. Those worksheets went to a keypunch operator to punch the cards for the computer. A dispatcher then stacked the cards together with cards from other projects to make up a run. It often took days just to get a printout back, and the complete process for a new idea could take months. Before a computer program could go into production -- running real data for an actual airplane -- it had to survive a rigorous Air Force review.

We simply couldn't afford the time this cumbersome process demanded, so I spent many hours down in the computer room working shoulder to shoulder with the operators, bootlegging a keypunch machine to correct glitches and get useful results on my own. I became very proficient in all aspects of the technology, and I was glad of it. The whole shop was heavily unionized, so everything had to be handled with great care so as not to step on anyone's turf.

My major engineering project, my daytime job, was to develop a program to transfer the wing and tail loading curve information into discrete loads on individual finite element points. Lockheed hired a Georgia Tech professor and a mathematician to guide me in designing what became the Panel Point Loads Program. Jim Kennedy, one of the programmers, and I worked very closely together to push the program through the process and make it useful for the C-141 project, and later for the C-5A. Jim and I became good friends along the way -- I was best man at his wedding and was present at the birth of both his sons.

Jim and I also worked together on a program I dreamed up called the Tab Form Simulator, meant to break the log jam on getting engineering work onto the computer. Most aircraft analysis work involved big sheets of blueprinted paper forms called Tab Forms, which armies of women filled out by hand using manual calculating machines. Our group maintained a library of hundreds of these forms covering every aspect of structural analysis. The idea behind the Tab Form Simulator was to have just one program that read in data cards written in a FORTRAN-like language, simulating the calculations of a tab form with a deck of input data

cards and printing out the resulting columns of numbers. That way, any engineer could run a new idea directly, without waiting on the mathematician-programmer bottleneck. Jim did all the actual programming, and I shepherded the program through the approval process and championed its use.

The Tab Form Simulator was, in essence, the same idea as VisiCalc and Excel, only it predated those by 15 years -- something I still take real pride in. Jim and I won a Lockheed Buck Hunter of the Month award for it. By the time I returned to Lockheed after graduate school, the computer center had expanded from a single 709 to three 7090s, and one of them was running the Tab Form Simulator exclusively.

A white car parked in a parking lot

When I first arrived in Atlanta, I had almost no money and no idea how far away Marietta was from the Y where I was staying. I couldn't keep mooching rides off others staying there, so I used my last $125 as the down payment on a high-mile Ford Anglia and moved into a rented room over a garage. A few paychecks later, I moved into a rental house and bought a new red and white Corvair. On one vacation, I drove that Corvair all the way to Kansas City to an aircraft mechanic school to earn my FAA A&P

Mechanics License. I never actually used it, but it was an accomplishment I was proud of all the same.

A small airplane flying in the air

The nearby little airport had a Civil Air Patrol unit with a military version of the Aeronca 7, a two-place observation plane with 90 HP and a climbing prop. It was a ball to fly -- greater visibility and more power than the J-3. I flew cadet orientation flights and several search missions in it, and I served as the maintenance officer for the unit. I could take off with the stick all the way back, and in a stiff wind, the L-16 would go practically straight up. I was the only one in the unit who flew that plane.

The Civil Air Patrol's mission was to introduce young people to aviation and civil society, much like the Boy Scouts but with an Air Force flavor -- and I loved being part of that. I flew many cadet orientation flights for kids taking to the air for the very first time. I remembered my own first flight in Dixon years before, and I loved watching that same universal wonder and joy light up on their

faces. I am proud to say that none of the kids ever got airsick on my flights. Back when I was in the Civil Air Patrol in NJ, I had been appalled by the attitude of some pilots who thought it was fine to let the orientation kids get sick. Part of the difference was that the L-16 was open, noisy, and airy with excellent visibility, while the NJ Cessna 172s were closed in, quiet, and had small windows. Cessna 172s, frankly, are not much fun to fly or ride in.

Another mission of the Civil Air Patrol was search and rescue. We mobilized every few months to fly search patterns over the rough terrain of North Georgia and Alabama, hunting for a missing plane that hadn't closed its flight plan. We'd fly or drive to the assigned mission headquarters, get handed a sectional chart marked with our specific search area, and be assigned to a plane -- not usually our own -- and an observer. Most flights ran about an hour or two. If the observer happened to be a pilot too, we'd trade off and cover two areas instead of one. It was essential, sometimes tedious work, but it was also fun to fly a variety of planes and be part of such a congenial group of enthusiasts. Low and slow in the mountains was dangerous and plenty bumpy. We had some anxious missions in planes with fuel systems that were hard to figure out -- I'm talking to you, Luscombe owners.

Later, I bought a quarter share of a 1948 rag-wing Cessna 170, a four-place 145 HP plane, a bigger cousin to the two-place 140. I flew that 170 on several trips to Fayetteville, NC, to visit Harry and Gwynne and Jim and Elizabeth, and to Columbia, SC, a couple of times to visit her folks. I built a transistor power supply for the Lear tube radio to replace the heavy old vibrator supply -- a satisfying bit of tinkering -- and took out the obsolete CRT Omni

screen. I was still very much a finger-on-the-map pilot, and our radio only had 3 working transmitter channels anyway. The rag-wing was a genuine joy to fly, with excellent controls and a reliable 120 MPH cruise speed. Later models with metal wings feel clunky and slow by comparison.

On a business trip to Boston, Jack fixed me up with a blind date to the Boston Pops with a friend from his church group. Betsy had graduated in History from Boston University and was working in the MIT admissions office.

I enjoyed my work at Lockheed and made some good friends there, but it was a dead-end job with no real prospect for advancement. I lived alone in a rented house with no social life and no girlfriend, and it was lonely and depressing more often than not. I had saved enough by then to return to grad school, so I sold my share of the plane and moved on to the University of Illinois.

Urbana

University of Illinois, 1964 – 1965

Most of the engineers I worked with at Lockheed had a master's degree tucked under their belt, and I could feel the gap. I just had to know more to get ahead — that itch never left me. I took some courses at Georgia Tech, but that was too slow and honestly not as exciting as my real work. So I saved up enough to afford a year of graduate school. It took two years in the end, but I came away with more money than I started with, which still makes me grin. The University of Illinois was virtually free for veterans, and I landed an assistantship in the ILLIAC lab that paid me a salary. I was having too much fun and too much work to spend any money at all.

I was still officially in Aeronautics and Astronautics, same as before, but I spent nearly all my time down in the computer lab with the ILLIAC II, which didn't even belong to a department yet — Computer Science hadn't become a thing, let alone a degree. The ILLIAC II was the first all-transistor super-computer, and let me tell you, it was a wonder to behold. It took up an entire building, with each module standing two stories tall — what would today be a fingernail-sized chip weighed half a ton back then! It had just calculated the world's largest prime number, a feat none of the vacuum-tube computers of the day could touch; they simply couldn't stay running long enough to finish the job.

A person sitting at a desk in a room

I did all sorts of odd jobs in that lab, scrambling to keep up with the exploding demand for access. We were putting in a variety of terminals and running time-sharing experiments — this was way before PCs and networks, mind you. I supervised paid undergraduates as they debugged the Dartmouth BASIC system that GE had just bought, and we hooked up individual telephone lines with acoustic couplers to connect our teletypes and other terminals all the way to Hanover, NH. IBM had a big presence in the lab too, trying to figure out why the students hated their equipment so much (IBM insisted on designs that locked up the keyboard if the computer wasn't ready for the next character — maddening). It was a genuinely fun time. IBM even offered me a job in Detroit, but I wanted no part of their culture.

I wrote my thesis on the design of a timeshare system for a small computer without interrupt capability. Alongside that I took courses and sat in on seminars on aero subjects. My advisor was

the head of the Aero Department, and his specialty, like mine, was viscoelasticity — the structural properties of Jello-like substances such as solid rocket fuel. All math, no lab work, but I loved wrestling with it.

U of I had a giant air program and its own airport, and I made the most of it, renting Cessna 150s and joining the Glider Club. Still, my interest in airplanes was waning, and my eyesight was starting to give me trouble, so I didn't do much actual flying. Computers and computer languages had become my new passion.

A yellow plane on grass

Glider flying is a hoot, I'll say that. We had a big, clunky two-place training glider with an enormous wing, a single tire, rudimentary instruments, and no radio at all. A little Piper Cub with a big

engine towed us up on a long thin polyethylene rope. It takes a whole team to launch a glider — a runner on each wing tip keeps the thing upright, since when you land, one tip will hit the grass and spin you around to a stop. You unhook at about 2,000 feet and start hunting for an updraft. Illinois is flat as a pancake, so there's no hill soaring to be had; the only updrafts come from freshly plowed farm fields where the sun heats the earth. You detect an updraft with a variometer, a wonderfully simple instrument made from a Quaker Oats box connected by a tube to a plastic whizz displaying two pith balls — a green one for air rushing out of the box as you ascend, and a red one for air going in as you descend. When you see that green pith ball rise, you rack the plane into a very steep turn to stay inside the rising column of air. The real artistry is watching those pith balls while you feel out the shape of the column beneath you. Sometimes you could actually see the farm field producing the updraft, and the cloud that would form above you from the moisture rising in that column. Some pilots could feel it through the controls, some sixth sense telling them exactly when the plane was rising or sinking. I never quite got the hang of that, and I'll admit I was a poor glider pilot. My flights were mostly a tow up, a few minutes hunting for lift, and then back to the airport.

U of I is only 150 miles from my folks, so I visited them and my Chicago-area relatives often. I lived in a dorm and had almost no social life to speak of. Most of the graduate students I worked with were married, and only a few of them ever became real friends.

Looking back on it now, the University of Illinois is really where I should have gone as an undergraduate. Close to home, co-ed,

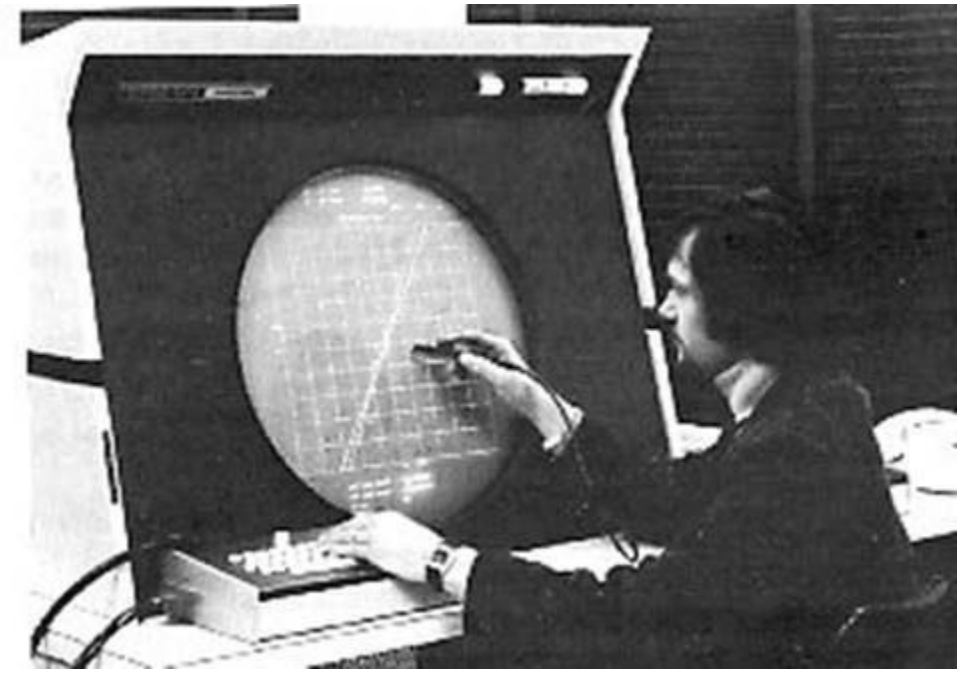
inexpensive, with an airport right there, and so much less academic pressure and workload.

Betsy entered graduate school at the Episcopal Theological Seminary near Harvard Square. Jack and Jill asked us to stand by them at their wedding in Copley Square, and we had a frantic time assembling an English wedding in Boston up to the standards of Jill's mom (Jill is English, after all). Betsy and I spent most of the night before the wedding typing up individual menus for the reception — a labor of love if there ever was one. It would be many years before Betsy and I got back together, in 1971, but we stayed connected all along through Jack and Jill and through letters back and forth.

Research

Lockheed Georgia Research, Marietta, 1965 – 1967

I returned to Lockheed to work alongside my friend Jim Kennedy in the brand-new research facility, and together we developed the first timeshare multi-user graphics system for part programming numerical control machine tools. What's now called Computer-Aided Manufacturing (CAM) — an offshoot of Computer-Aided Design (CAD) — and I got to help build it from the ground up.



A person using a computer

We had these large display consoles, the kind used for air traffic radar, fitted with light pens. Operators would use the light pen to maneuver shapes right on the display, simulating the motion of cutting tools as they made parts for aircraft. The end result was a tape that fed the milling machines to cut out the actual pieces — quite a thing to watch come together.

COMPUTER GRAPHICS TECHNIQUES APPLIED TO AIRFOIL DESIGN

M. E. Haas
Senior Scientific Programmer Advanced Computing Techniques Department
and
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■ Designing a new airfoil for an advanced aircraft means finding a compromise among many conflicting requirements. Behavior of a wing in supersonic or subsonic cruising flight is vastly different from its characteristics in the low-speed take-off and landing modes. It is often necessary, therefore, to perform a variety of theoretical and experimental investigations on many different airfoils before an optimum design can be evolved.

During the past half century, a mass of knowledge has been accumulated about airfoils and wing designs. This knowledge is in the form of reference works such as the NACA catalogue of airfoils and company developed designs. All of this information is useful in starting new designs, but all too often the aeronautical engineer is interested in modifying an existing airfoil or wants to know more about its flight characteristics outside the regime covered by available data.

Up to now, the windtunnel has been used extensively to derive the data required by the aeronautical engineer to complete his design. Windtunnels will be used for this purpose for quite some time to come, but the state-of-the-art in aerospace sciences has advanced to the point where attempts may now be made to make a first selection of an airfoil on a theoretical basis. To be truly effective, these theoretical investigations have to be arranged so that results can be made available to the aeronautical engineer quickly and in such form that he can easily judge the merits of a certain design.

The Role of man-computer graphics. It is precisely in this area that man-computer graphics can play a paramount role. In light of the application described here, man-computer graphics may be described as a process where:

- A computer displays results of calculations in graphical form on a TV type screen, and
- A designer can interact with the displayed data using a hand-held light pen to instruct the computer as to how to proceed.

The concept of man-computer graphics was initiated at the Massachusetts Institute of Technology around 1960. Shortly thereafter, Lockheed–Georgia Company organized a program of research to develop the concept to a stage where man-computer graphics techniques could be used to solve design problems in the aerospace industry.

First applications of the new technology were the preparation of tapes for numerically-controlled machine tools to produce parts for the massive 0-5A Galaxy airlifter. The Galaxy is presently under production for the U. S. Systems Command and Military Airlift Command.

In addition to its present production role, a continuing research program is in progress at Lockheed–Georgia to adapt and develop man-computer graphics to assist all engineering areas, especially in preliminary design and aircraft structural analysis.

The Hardware. Equipment used in the research laboratory to develop the airfoil synthesis program and other computer-aided design techniques consists of a Control Data Corporation (CDC) 3300 general purpose computer with a 32K core memory; a CDC 854 disc pack; four tape units; a card reader; and a CDC 270 Digigraphic system with two display consoles. Other hardware includes a UNIVAC 1004 computer to print output tapes and an off-line CalComp 765 plotter to produce plots from tapes.

The display consoles each house a 20-inch diameter display tube and a fiber optics/photomultiplier light pen. The display tube, light pen and display layout for the airfoil synthesis program is pictured in Figure 1.

Display commands to draw lines or figures are usually written into the drum memory and supplied by the drum to the console at a rate of 30 frames a second. These commands may also be routed directly to the display from the computer. The light pen can be pointed at any

* On leave from the Department of Aeronautical Engineering, Delft Technological University, the Netherlands.

A close-up of a newspaper

A visiting professor from Delft University and I co-authored an article for Software Age on a graphics program for airfoil design. My only published work, and I'm still a little proud of it.

I lived in another rented house, this time with my cat, Tiger, who mostly kept to himself in the linen closet. I had a small sailboat on a trailer and sailed it on the two large lakes north of Atlanta. I did a little local flying in rental planes too, but I have to admit I'd lost the enthusiasm I once had for it.

The factory was churning out C-130s and C-141s and just starting on the C-5A. Lockheed was booming, with over 4,000 engineers on site, mostly contractors. But once again I was living in a rented house with no companionship, no real social life, and it just wasn't fun for me anymore. I wanted a change. So I asked to be hired by Control Data Corporation at the Digigraphics Division in Burlington, MA — the very people who made the graphics system we'd been using.

Digigraphics

Bedford, MA (Control Data Digigraphics), 1967 – 1971

Control Data bought the Digigraphics Division from the ITEK Corporation, but they had no software capability of their own, so they'd hired a software company to design a system to sell. What that company produced was totally inappropriate mumbo-jumbo, and Control Data was losing sales of large computer systems because of it. I was given the green light to completely redesign the software as FORTRAN subroutines, making it easy for customers to produce their own designs. We called this the Control Data Interactive Graphics System, IGS, and it ended up being sold with all the Control Data graphics systems, not just from the Digigraphics Division.

I designed the system and supervised its programming for the CDC 3000 computers, and it was later reimplemented in Minnesota for the CDC 6000 supercomputers. I wrote or edited all the graphics portions of the reference manual, working as a contractor after CDC closed the Digigraphics Division.

I'm particularly proud that IGS introduced modeling Plex beads to Fortran programming, well before virtual memory and structures became common. Doug Ross at MIT and Jim Kennedy at Lockheed were the ones who introduced those concepts, and I loved being part of carrying the idea forward.

Thanks to its graphics capabilities, Control Data made fortunes on large systems for the aerospace and automotive industries. I started a joint venture with several Control Data customers to produce a universal CAM system based on the Automated

Programmed Tooling (APT) language used for manually programming machine tools. I was traveling all over the place for it, and I have to say, I did not like that much.

Burlington, just outside Boston, was all rural and suburban with no rentals to be found, so I bought my first home there — a 3-bedroom, 2-bath colonial in Bedford, just a bike ride away from work. I used the GI bill and had no trouble affording the house. It sat close to Hanscom (now Bedford Airport), and I checked out on rented Piper Cherokees there, but flying wasn't fun anymore. The air traffic control around Boston is tedious, the visibility and weather usually awful, and the planes themselves too modern — clunky, really; the age of fun-to-fly planes had passed.

I sold the small sailboat and imported an English MacWester 26, a 4-berth inboard sloop with a head and galley, mooring it in Beverly Harbor, just north of Salem and Marblehead. It arrived on a small freighter from England while I was off in San Diego on a business trip. Some friends and the salesman picked it up in Boston and motored it to a boatyard in Marblehead to repair some shipping damage. When I got back, I picked the boat up from the yard and motored alone out to a buoy to sort out the sails, lines, and packing clutter. I'd gone just a few boat lengths on my way to Beverly when the motor conked out on me, and I ended up sailing it single-handed on only the main for six miles to my rented mooring. I was proud of how well that boat handled, and prouder still that I hadn't lost the skill I'd picked up in scouts so many years earlier. The engine was a 1920s-vintage 2-cylinder, 2-stroke, 10 HP gasoline inboard that failed often — a real character of a machine. I made scores of trips to Gloucester, Rockport, and

Ipswich, with friends, alone, and with Digigraphics customers, but truth be told, I liked fiddling with the boat more than actually sailing it. Eventually I sold the MacWester to Jack and Jill, and we sailed it down together to their summer home near Mystic, Connecticut. He replaced the engine with a sturdy 4-cylinder diesel.

I dated a bit and joined a young singles church group in downtown Boston. Betsy had moved to Richmond, VA, so I didn't see her while I lived in Bedford. Digigraphics closed on good ski days, and most of us would drive up to various ski resorts in NH. I traded the Corvair for a Barracuda, which wasn't exactly in keeping with my personality but was a lot of fun to drive.

Control Data decided to combine all the graphics work in their new facility in Sunnyvale, CA — a horrible big office complex full of cubicles. Only seven of the 100 people working in Burlington moved out there, and the Control Data graphics business folded not long after. Later, the whole company folded too — gross incompetence at the top, if you ask me.

Cabin John

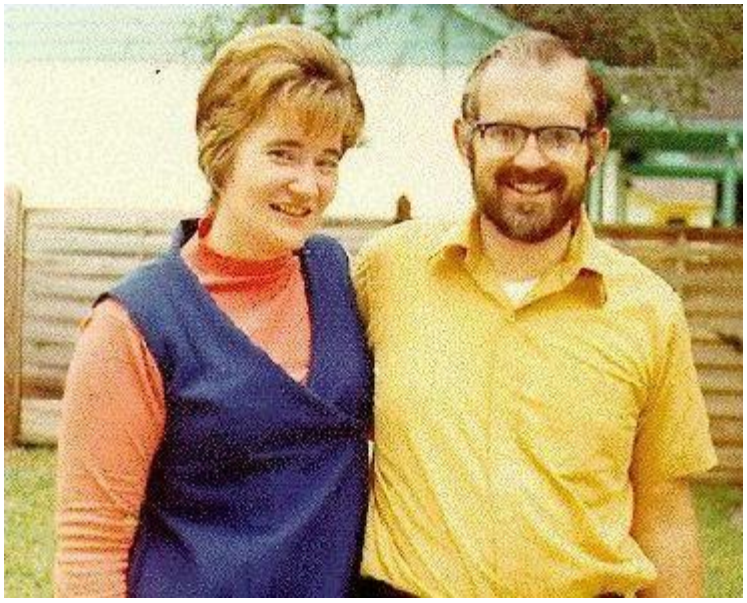
Naval Ship R&D Center, 1971 – 1980

The Naval Ship R&D Center (NSRDC, usually called the David Taylor Model Basin, DTMB) near Bethesda, MD, had installed a complex of super-computers from Control Data, and one of the features of that complex was a Digigraphics graphics terminal. I was hired to help apply graphics to Navy problems. I was supposed to be a guru, so — half in jest — I grew a beard to look a bit older and wiser.

I sold my Bedford house and bought a run-down rambler near downtown Silver Spring, MD. NSRDC had hired a bunch of new graduate mathematicians in anticipation of the supercomputer installation, and there was a whole crowd of newly married and soon-to-be-married young people there — a very different atmosphere than I was used to.

I flew (Eastern Airlines) down to Orlando, FL, where Betsy had just started as Youth Minister at a Winter Park church. She agreed to my proposal, and we were married soon after in NYC. We are living happily ever after. By far, the best years of my life.

The Silver Spring house turned out to be too far from the Model Basin, so we sold it and moved to a home in Cabin John, just a short bicycle ride to work.



A person and person smiling

A person standing in front of a house

A family posing for a photo

I could cycle home for lunch in summer, or meet Betsy and the kids after work at the nearby community pool complex. We got along great as a couple and fit well into our community and society. Many of our best friends are from the Cabin John days, which our daughter, Ann, called "the golden years" — and rightly so.

We started to build our family. Six kids adopted from Korea. At that time, Korea was having economic problems, and it was easy to adopt kids in need. We did not have to go to Korea to get them.

We had a big problem with the racist bigot, Senator Eastland from Mississippi. We had to get a bill through Congress to allow John (age 5) into the country. Eastland retired, and we had no similar problems for Virginia and David.

Soon after John arrived, we took a family trip in Betsy's 2-door Impala, and three little kids crammed into that low back seat

made for a mighty uncomfortable ride. My mom bought us a 1976 full-size window van (we traded in my Barracuda for it), and we took many long trips in that thing, including one all the way to Rochester, MN to visit my sister, and back through Canada and Niagara Falls.

We camped in a big blue 3-room tent, gifted by a good friend who had actually had that very tent at Woodstock. We later got an old camper trailer. The van finally gave out at over 100,000 miles. We've had many other cars since, as the kids started driving, and we eventually ended up with our 2009 Prius.

The work itself was fascinating and touched nearly every part of the Center: hydrodynamics, acoustics, structures, seakeeping, propulsion, and computer science. I couldn't have asked for a richer playground for a curious mind.

Beyond my graphics work, I threw myself into spreading interactive terminal use throughout the Center. I installed and publicized EDIT, an easy-to-use text editing program, on the CDC and Burroughs computers, and helped spread the use of RATFOR, a more forgiving programming language drawn from the book Software Tools by Kernighan and Plauger of Bell Labs. Helping people get comfortable with these tools was some of the most satisfying work I did.

I made a prototype real-time seakeeping contour plotting system on the Tektronix storage tube terminal. This was to become the basis of eventual installations on the bridges of ships, helping crews navigate through heavy seas — the kind of practical payoff that always got me excited.

We were a node on the original ARPANET (the predecessor of today's internet), part of a big experiment to integrate math from MIT's Macsyma symbolic algebra system on a PDP-10 in Cambridge, MA, with Navy Nastran structural analysis on the CDC 6700 here at NSRDC, all under project supervision from the network center in Los Angeles, CA. I did the work on Macsyma using a 10 character/sec Teletype-33. My email address and office phone number are right there in the original ARPANET phone directory — still tickles me to think about that.

I won a year of paid sabbatical to go back to college. Most winners headed off to Stanford, MIT, Penn, or elsewhere to get their MS, but I didn't want to leave home, and I already had a Masters anyway, so I enrolled at George Washington in a non-degree program. I commuted downtown for mostly evening classes in math, computer science, and hydrodynamics, and I got to run some genuinely fun hydromechanics experiments in the wave basins at Ft. Belvoir. The course on differential equations was a real challenge for me, and I nearly flunked it. One project asked me to write a full FORTRAN-77 compiler for the TI-9900 microcomputer in SNOBOL (the professor happened to be the author of our SNOBOL textbook). I managed to get the full compiler written and desk-checked for running on the 9900, and writing in an advanced computer language while targeting an advanced microcomputer really paid off in the end. Years later, Ivan Polonsky, one of the authors of the SNOBOL language, became a good friend and coworker of mine at Bell Labs — funny how these things circle back around.

It was becoming difficult to live on my government salary. There was no chance for promotion, and inflation — 12% in one year — was a killer. We had to sell Betsy's car and stop work on a needed addition to the house. I started looking for another job and used the lab's new UNIX PDP-11 system, with its word processing and daisy-wheel printer, to write my resume and letters (with permission, as training and evaluation, of course). One submission to a 2-line ad in the New York Times bore fruit: Bell Labs Holmdel needed a counselor for their expanding UNIX installations. They were an old-time IBM shop, and precious few there even knew how to spell UNIX.

We sold the Cabin John house — with the attic replaced by a partially completed 3-bedroom, 1-bath addition — to a friend of a friend who wanted the location and a large driveway with a garage for his beer pump business. The buyer expanded the house further and completely gutted and remodeled it. We got enough from the sale to buy a 6-bedroom, 3-bath home in Fair Haven, NJ, and we lived there quite happily with the kids in excellent schools, involved with scouts and the community.

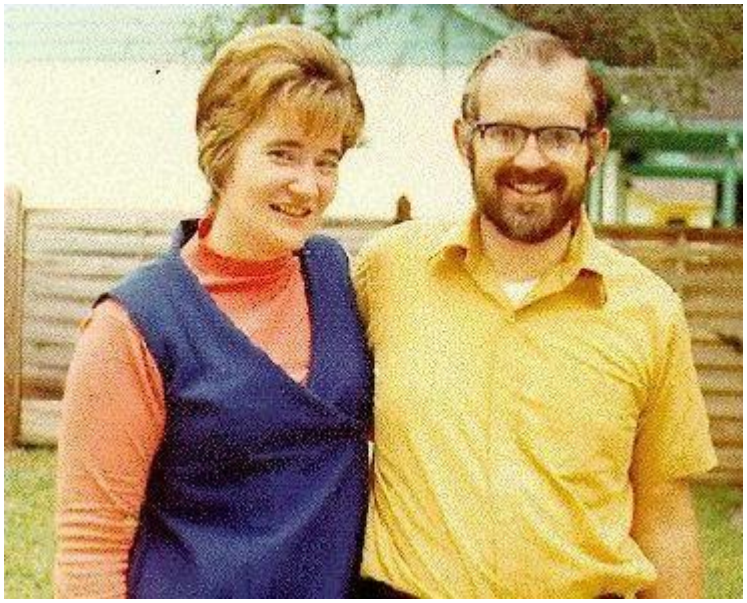
Family

6 Kids, 6 Grandkids, 3 Great-grandkids

I flew (Eastern Airlines) down to Orlando, FL, where Betsy had just started as Youth Minister at a Winter Park church. She agreed to my proposal, and we were married soon after in NYC. We are living happily ever after — by far, the best years of my life.

We both loved kids and wished, with our whole hearts, to build a family. After a year of trying and dozens of fertility tests, we decided to get on with the program and adopt. The local agencies were discouraging, though, with waiting lists years long for white babies, and an outright prohibition on the adoption of Black children by white couples — they wanted to retain what they called the Black traditions of poverty and squalor, which still galls me to think about.

Betsy, who is an avid reader, came across The Children, by Jan de Hartog, describing the adoption of his two girls from Korea — and something in that story lit a spark in both of us.



A person and person smiling

We started to build our family. Six kids, adopted from Korea. At that time, Korea was having economic problems, and it was easy to adopt kids in need — we didn't even have to travel to Korea to get them.

We had a big problem with the racist bigot, Senator Eastland from Mississippi. We had to get a bill through Congress just to allow John, then age 5, into the country. Eastland eventually retired, and we had no similar problems bringing in Virginia and David.

A family posing for a photo

This chapter explains how our family grew and some of the fun we had together along the way. The photographs that once accompanied this chapter come from a Google Photos Album made of a selection of 1,121 slides from the thousands we collected over the years, distributed to each of our kids.

Bell Labs

Holmdel, NJ (AT&T Bell Labs), 1980 – 2013

I walked in as a contractor, not an employee, hired to run the UNIX support desk in the Holmdel Laboratory. Bell Labs was part of AT&T, one of the largest, wealthiest companies on the planet, and Holmdel was one of its crown jewels -- a gleaming glass-enclosed 6-story building humming with about 6,000 employees. It was an incredible place to work. Walk down any hallway in that building and you'd find a noted Ph.D. expert on just about anything you could ever need help with. Being part of such a dynamic, exciting environment felt like an honor and a privilege every single day. Honestly, I got an ego boost just walking through the front doors.

The Holmdel lab housed an immense IBM computer center devoted to their scientific work, and UNIX systems were just starting to arrive for documentation and publishing -- the first stirrings of what would soon become serious scientific and engineering tools. The computer center brought me on for the UNIX hotline phone support, and I loved it: fielding questions, consulting with individual projects as they wrestled UNIX into their operations. Eventually they chose me to be the C language counselor for the entire corporation, freeing up the C development team at Murray Hill to focus on their own work.

Over my career at Bell Labs, I got my hands into systems programming, driver development, and applications programming across most flavors of UNIX -- UNIX for real-time systems, SPARC Stations, AT&T 3B, and Amdahl mainframes. I'd already cut my

teeth on the PDP-7 back at the University of Illinois, where I built my Master's thesis around it, working in raw assembly language with no operating system and no interrupts to lean on.

When I stepped into the role of UNIX Counselor, I threw myself into installing and championing Usenet at Holmdel and across every Bell Labs location and project I could reach. My part in that story even made it into a history of the era: "The creation of ARPANET mailing lists in the 1970s and of Usenet newsgroups in 1979 provide a modern means for the kind of democracy Paine admired."

After a year or so, I earned the title of full Member of the Technical Staff (MTS), the universal job description for any technical person with a Master's degree. The HR people were absolutely puzzled by my Aero degree -- I may well have been the only aeronautical engineer in the whole labs.

Eventually enough people became sharp in UNIX and C that they could take over the handholding and hotline work, and I moved on to help individual projects wrangle the computer center, which by then had grown to hundreds of UNIX machines. When AT&T was broken apart by antitrust court cases, I was promoted to MTS Supervisor of the Computer Center of American Bell, a brand-new company AT&T formed to market networks and equipment outside the regulated monopoly. American Bell built a building just a few miles from Holmdel.

A few months later, Lucent Technologies emerged as the new name for the Western Electric Division of AT&T and absorbed American Bell whole. I became Supervisor of the Lucent Gazelle Project Computer Center in Holmdel. Gazelle's computer center

had been doubling in size every single year and had 22 VAX-780s along with several other systems. By the time I left, we were installing a massive Amdahl machine equivalent to 22 VAXes -- while holding onto everything we already had. I had a staff of 9 to keep it all running.

I was totally unprepared to be a Bell Labs Supervisor. I simply didn't have the people skills or the temperament for the job, plain and simple. After a year of utter Hell, I got into a dispute with my Department head over a promotion he'd promised one of my people and then reneged on. I moved to the Merlin Project as an MTS, keeping my Supervisor pay scale. My family and I were enormously relieved.

Merlin was a tiny PBX built for small offices, and it turned out to be a tremendous success for Lucent -- they sold millions of them. I worked on integrating Merlin with the new AT&T-Olivetti Personal Computer, an IBM PC clone. Merlin had only a Z-80 CPU and no external connections, so that integration was truly a hopeless task, but I had a great time playing with voice cards on the PC anyway.

Over my 22 years with Bell Labs, I held MTS jobs across many projects. The Bell Labs culture made it remarkably easy for projects to move and trade people, and for people to move and change positions freely. I had offices and computer installations in nearby Holmdel, Lincroft, and Middletown. Through all of it, my focus stayed the same: training and helping the work of others, making their jobs easier and more successful -- usually by introducing new computer languages (C, C++, TK/TCL, PHP, Java) and computer networking into their projects.

One notable project was Transview, the commercialization of the network control system AT&T Long Lines used to monitor and control the nation's long-distance network. I oversaw the graphics software for the myriad Sun SPARCstations that drove the giant video wall displays and operator consoles. We even sold a system to Mexico and the Netherlands. That project got complicated fast, thanks to the stark disparity between the US, with very few routes and hubs running at 45MHz, and the densely packed Netherlands, with far more routes running at 2MHz.

One time AT&T ran a layoff to cut costs, and I was able to retire with 5 years added to my age, 5 added to my years of service, a 20% bump in pension, and full retirement benefits. The very day I left AT&T, I walked downstairs in Holmdel and started work on a project at Lucent -- same pay grade, roughly the same work, with people I'd already worked alongside on other projects. Years later, I retired for good from Lucent just as they closed the Holmdel building for good.

(The term Bell Labs is rightly used for any of the many installations and organizations that once held the name under AT&T. Bell Labs is a shared culture and a shared history. The official Bell Labs today is a tiny research lab in Murray Hill owned by Nokia Corporation. Lucent is now a division of the French corporation Acutel. AT&T itself is a gigantic financial conglomerate down in Texas.)

Beyond the computer center work with UNIX and C, I dove into Sun SPARC stations and graphics, C++ and Java languages, and weaving the internet and web into projects. I introduced Usenet Email and a bulletin board system at Holmdel, web-mastered the

very first Bell Labs wide website (built on University of Illinois software that would go on to become Netscape), and brought Tcl/TK and Java into several projects. I traveled to teach UNIX Internals, C, and Tcl/TK at Bell Labs locations across the map. I even taught Java at Brookdale Junior College for 2 semesters -- teaching has always been one of my great joys.

When the kids left for college and life beyond Fair Haven, we moved to a smaller 3-bedroom, 2-bath home nearby in Tinton Falls, NJ. The taxes were much lighter, the house far easier to maintain, and it sat closer to work besides. As our health began to slip with age, we started planning to move in a few years to Seabrook, a CCRC near us.

Leisure World

Silver Spring, MD, 2013 – 2021

At a family gathering with John and Na, the kids gently raised the idea that we move closer to one of them, so help would be nearer at hand in an emergency. They lined up a realtor to see what was available in MD, and a tour of a Leisure World house much like our Tinton Falls home, at about the price we'd get for ours in NJ, was all it took to convince us. Na worked her interior design magic, tracked down the perfect unit for us, and with the other kids pitching in, transformed it into our comfortable new home.

Betsy and I feel such deep gratitude that we continue to have good health, love for each other and our family, and the means and electronics to stay close to everybody.

Living close to John and Na has been wonderful. We get to watch the twins grow and thrive right through kindergarten, keeping pace with their Chromebook virtual classroom during the COVID-19 lockdown.

Our family has been the heart and focus of our lives together: Paul, John, Greg's Mom, Na, David, Kim, Virginia, Greg, Mary, Justin, Diane, Gordon, Ann, Abi, me, Betsy, and Elise. Not shown: Maggie, Elliot, Ashley, Elijah, and Adelinn.

Riderwood

May 18, 2021 – present

Our health steadily worsened late in 2020. I kept having too many frightening 911 call scares with heart and lung troubles, and Betsy grew increasingly less mobile. I feared we wouldn't be able to get reasonable medical care staying in Leisure World, and that we'd run out of money if real disaster struck. So I decided we needed to move while we still had the strength, health, and income to make it happen -- and we set our sights on Riderwood.

We've settled into a small two-bedroom, two-bath apartment. It's bright and airy and has every feature we need, and best of all, it's still close to John, Na, and the twins.

About This Edition

This book was compiled from the History chapters of the personal website of Mel Haas, melhaas.lwbook.net, for archival purposes. The stories, facts, dates, and events are exactly as the author recorded them; the narrative voice has been polished for a livelier,

more vivid telling. Photographs from the original web pages are reproduced here as they appeared in the source chapters.

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Comments, observations, or corrections may be sent to melhaas333@gmail.com.